SYSTEMS AND SOLUTIONS, LTD.
5054 KENERSON DRIVE
FAIRFAX, VIRGINIA 22032

PROGRAMMING KITS

CATALOG

March 1982

Copyright 1982, Systems and Solutions, Ltd.
All rights reserved.

March 1982
SSL 101-82

Programming Kits
Catalog

Programming is building, and like building with blocks, bricks, or milk cartons, a builder needs the materials to build with. The building blocks of programming are usually very small pieces of instructions for the computer. These blocks are just too small and slippery to really build anything reasonably useful in a reasonable period of time. Systems and Solutions Ltd. provides, in kit form, the useable size building blocks. They come in several sizes and shapes and they still need some of those individual program instructions to act as glue between some of the blocks, but not much.

These kits walk through the developement of a program thereby teaching programming by leading the kit-builder through building the program from scratch. The general method followed is to lay out the control structure and then fill in the details until all the planned parts work. Each step of the kit consists of some additional program steps or changes to previous ones, with a discussion of their effect. The program can be run at the end of each step and will take shape as the kit steps are completed. The program can also be saved at the end of any step and building re-initiated at that step by loading the results of the previous step.

Our aim in producing these kits is to provide the personal joy of programming as well as the fun of playing with the final result.

Enjoy,
Systems and Solutions, Ltd.

Example:

This is a sample of the first few steps which are nearly identical for most of the kits. It gives an example of the level of detail in the documentation and the design methodology used. This sample is taken from the ARITH 1.0 kit which generates groups of addition and subtraction problems, without negative numbers, up to 5 digits long.

Specific Instructions

Step 1. Lay out the design of the program.

Type in the following lines:

```
 10 REM INITIALIZE
 40 REM SHOW MENU
250 REM GENERATE/GRADE PROBLEMS
740 STOP
```

Go ahead and run this program. The steps are only notes on the layout of the program so nothing happens. The code 9/740 at the bottom of the TV screen means that the program stopped normally, code 9, at line 740. Hit "new line" again to get back to the listing.

Step 2. Identify the program

The first thing we are going to have the program do is show the title. Enter in these lines as part of the initialization:

```
50 LET P$ = "ARITH 1.0"
60 CLS
70 PRINT
```

```
80 PRINT
90 PRINT ,P$
```

The variable P$ is assigned the value "ARITH 1.0" rather than just printing it so we can use it later. Run this program and see that it clears the screen and then prints "ARITH 1.0" near the center at the top. The comma before the variable P$ in line 90 causes the printing of P$ to begin 8 spaces over. This centers the title. Programs often have numbers associated with them. These usually indicate the major and minor revisions to a program. "1.0" means the first major version with no minor revisions.

Step 3. Build the menu control structure.

The Arith 1.0 program will be menu driven. This means the user is given a menu of options and makes a selection. Based on this selection, the program will generate addition problems, subtraction problems, or stop. Due to space limitations of the program the menu must abbreviated to just the letters without an explanation of their meaning as is normally found in menus. Enter the following:

```
100 PRINT
110 PRINT "A, S, OR E?"
120 PRINT
130 INPUT A$
```

Now when you run this, the program waits for an input. After any input, the program continues and stops normally at line 790.

Step 4. Decode the input

The decoding of the input is needed next. By comparing the input to what is expected, the program can be designed to ignore bad inputs without blowing up. Enter these lines:

```
140 LET T = 0
150 IF A$ = "A" THEN LET T = 1
160 IF A$ = "S" THEN LET T = 2
170 IF A$ = "E" THEN GO TO 740
180 IF T = 0 THEN GO TO 60
```

When this is run, if the input is not exactly A, S, or E, the program goes back and asks for another input. We could have the user enter a number corresponding to a menu item, but the letters are more related to the user's request and therefore easier to remember. Another method of ensuring that an expected input was made is used in a later step in the kit.

Step 5. Use the input.

We can now use the variable T to have the program do the desired tasks. Enter the following lines:

```
190 IF T = 1 THEN PRINT "ADD"
200 IF T = 2 THEN PRINT "SUBTRACT"
670 GO TO 100
```

When you run this much, the program is able to demonstrate that it 'understands' what you want by printing the desired operation.

The rest of the steps generate the random numbers, add output as a vertical arithmetic problem, the generation of longer random problem numbers, up to 5 digits under user control, generate one, then groups of 10 problem sets, and finally grade the resulting scores with a comment on the user's success.

Programs available:

These programs will run on a ZX-80 or ZX-81 without additional memory. The kit includes instructions to build the programs with explanation of what the programming step is doing and is designed so that the program can be run at the completion of each step to see the progress being made.

PARROT - When given names, actions, and places (or other phrases) by the user, it builds amazingly funny random sentences. This is a kid (or adult) party game inviting participation and reactions of a group. The Parrot can say what you don´t want to and will surprise you with its ´original´ ideas. Comes with an initial set of ideas for phrases for entry.

$3.50

ARITH 1.0 - Grades responses to generated sets of addition and subtraction problems (without negative numbers) and comments on the accuracy of the player. Variable lengths of numbers up to 5 digits included. The kit discusses the easy expansion or modification to other arithematic operations such as multiplication, division, squares, cubes, etc.

$3.50

MICROARTIST - Allows you to draw pictures using normal and reverse video graphics choosing and placing symbols to the limit of memory. This is a miniture programming language. Documentation explains programming language interperter behavior. Serves as a programming introduction as well as generating interesting graphics.

...SOON...

DATES - Shows a month calendar on the TV screen for user specified month in history or the future. Makes dates in history or future more real. What day of the week were you born? What day of the week will your birthday be in 10 years? Documentation describes the calendar as well as builds the program.

...SOON...

PRISONER - Play the game of Prisoner where you work sometimes with and sometimes against your partner (the computer). Go along or trick your partner to get enough money to buy your way out of jail. Different computer strategies are described with the program steps necessary to implement them. Some are effectively unbeatable in only 1k of memory

$4.50

STARS - A simple program that randomly scatters a group of characters on the screen to produce interesting pictures. Using a "*" or ".", the results look like stars. Other symbols can be used to produce forests, maps, or crazy signs.

$3.00

MAZE 1.0 - You are at the entrance of a 16 room maze with a treasure in one room. You are given your room number and the room where the treasure is but you must find a path through the rooms to the treasure.

$3.50

ZX-TREK 1.0 - A miniture version of the popular Star Trek (trademark of Paramont Pictures Corp.) game. You are Captain Kirk in sector after sector of space that must be cleared of Klingons. Your shields' energy is reduced based on the strength of the enemy's shot, you can fire photon torpeados, and warp to another sector during your 5 year mission.

$4.50

SSL Programming Kits

ORDER FORM

Please order the kits desired using the following form (or a copy):

Quantitiy	Kit Name	Cost each	Cost
/ /	PARROT	$3.50	$.
/ /	ARITH 1.0	$3.50	$.
/ /	PRISONER	$4.50	$.
/ /	STARS	$3.00	$.
/ /	MAZE 1.0	$3.50	$.
/ /	ZX-TREK 1.0	$4.50	$.

additional postage for overseas ($.50/kit): $.

total: $.

Ship to: --

Make check payable (in US dollars only) to Systems and Solutions, Ltd. and mail to: Systems and Solutions, Ltd., 5054 Kenerson Drive, Fairfax, Virginia 22032 USA. Please allow 4 weeks for delivery.

April 13, 1982

Dear Kit-Builder,

We are very sorry about the delay in the delivery of this catalog. It does not represent the quality of production of our kits. (We had problems at the printers.) We photocopied the material to get you the promised catalog. The kits are same size but are printed and much easier to read.

Enjoy,
Systems and Solutions, Ltd.

SSL Programming Kits

ORDER FORM

Please order the kits desired using the following form (or a copy):

Quantitiy	Kit Name	Cost each	Cost
/ /	PARROT	$3.50	$.
/ /	ARITH 1.0	$3.50	$.
/ /	PRISNOR	$4.50	$.
/ /	STARS	$3.00	$.
/ /	MAZE 1.0	$3.50	$.
/ /	ZX-TREK 1.0	$4.50	$.

additional postage for overseas ($.50/kit): $.

----

total: $.

=========

Ship to:

Make check payable (in US dollars only) to Systems Solutions, Ltd. and mail to: Systems Solutions, Ltd., 5054 Kenerson Drive, Fairfax, Virginia 22032 USA. Please allow 4 weeks for delivery.

FROM

PLACE
STAMP
HERE

SYSTEMS & SOLUTIONS, LTD.
5054 KENERSON DRIVE
FAIRFAX, VIRGINIA 22032